Space Weather Forecast

Issued on Monday, 11 September 2023 at 13:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate-class flares likely (R1-R2 radio blackouts). Chance of G1 Minor storms 12 Sep.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Moderate, with two Moderate class flares observed early on 11 Sep. One was from a complex region in the northeast quadrant, which appears to have produced a non Earth-directed CME (coronal mass ejection). A further Moderate flare was observed from an increasingly complex region in the southeast quadrant. There are 11 sunspot regions in total on the visible disc, with the two largest regions, close to centre disc in the northern hemisphere both appearing relatively inactive. Remaining regions are relatively inactive and are only evolving slowly.

No Earth-directed CMEs (coronal mass ejections) have been observed in available coronagraph imagery, with a bright CME off the northwest assessed as far-sided.

Solar Wind / Geomagnetic Activity: Solar wind slowly increased from background to slightly elevated levels through the period. Total magnetic field strength started weak, but reached moderate levels for a short period early on 11 Sep. The north-south component was unremarkable, varying weakly between positive and negative polarities. Geomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to remain mostly Low with isolated Moderate flares due to a number of complex or developing regions on the visible disc.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs forecast. A fast solar wind may affect the Earth through 11 or 12 Sep, with recent observations inconclusive. Speeds may reach elevated levels from this feature, or possibly from a further source of a fast solar wind in the southern hemisphere through the next two days. Another fast solar wind may then connect with Earth, most likely on 14 Sep. Overall, the forecast is for Quiet to Unsettled geomagnetic activity at first, with a risk of Active or G1 Minor Storms on 11 and 12 Sep. This will likely ease to Quiet to Unsettled 13 Sep, with a subsequent enhancement most likely on 14 Sep, bringing a chance of Active intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	30	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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